CLAIMS

1. A device for equalizing an input signal, comprising:

a differential equalizer coupled to the first differential amplifier stage for frequency shaping the amplified input signal, wherein the differential equalizer comprises a floating ground for increased signal bandwidth.

2. A device for equalizing and amplifying an input signal, comprising:

a first differential amplifier stage for receiving the input signal having an input power level and for amplifying the input signal;

a differential equalizer coupled to the first differential amplifier stage for frequency shaping the amplified input signal, wherein the differential equalizer comprises a floating ground for increased signal bandwidth; and

a second differential amplifier stage coupled to the differential equalizer for further amplifying the input signal to provide an amplified output signal,

wherein the positioning of the differential equalizer between the first and second differential amplifier stages maintains a low level of noise and improved distortion levels.

3. The device of claim 2, wherein a comparison between the noise level of the device are improved over a noise level of a device having a single-ended equalizer positioned prior to amplifier stages.

4. The device of claim 2, wherein a comparison between the distortion levels of the device are improved over distortion levels of a device having a single-ended equalizer positioned subsequent to amplifier stages.

5. The device of claim 2, wherein the first and second differential amplifier stages and the differential equalizer are packaged in an integrated circuit, or wherein the first differential amplifier stage, the second differential stage, and the differential equalizer are packaged as integrated circuits.

6. The device of claim 2, wherein the device is located within a transmitting device

7. The device of claim 2, wherein the device is located within a receiving device.

8. The device of claim 2, wherein the differential equalizer has a set of fixed value components.

9. The device of claim 2, wherein the differential equalizer has a set of tunable value components.

10. The device of claim 2, wherein the differential equalizer is an up-tilt differential equalizer, the up-tilt differential equalizer comprising:

first and second differential inputs;

first and second differential outputs;

breakpoint circuits coupled between the first and second differential inputs and outputs for frequency shaping the input signal;

resonator circuits coupled between the first and second differential inputs and outputs for adjusting the input signal upward to a predetermined point; and

impedance matching circuits coupled between the first and second differential inputs and outputs for matching impedances of the device to a transmission medium.

11. The device of claim 2, wherein the differential equalizer is a down-tilt differential equalizer, the down-tilt differential equalizer comprising:

first and second differential inputs;

first and second differential outputs;

breakpoint circuits coupled between the first and second differential inputs and outputs for frequency shaping the input signal;

resonator circuits coupled between the first and second differential inputs and outputs for adjusting the input signal downward to a predetermined point; and

impedance matching circuits coupled between the first and second differential inputs and outputs for matching impedances of the device to a transmission medium.

12. A transmitting device for transmitting a signal having a particular frequency response, the transmitting device comprising:

an input for receiving an input signal having an input power level;

a device for amplifying and equalizing the input signal, the device comprising:

a first differential amplifier stage for receiving the input signal and for amplifying the input signal;

a differential equalizer coupled to the first differential amplifier stage for equalizing the amplified input signal; and

a second differential amplifier stage coupled to the differential equalizer for further amplifying the input signal to provide an amplified output signal,

whereby the positioning of the differential equalizer between the first and second differential amplifier stages maintains a low level of noise and improved distortion levels.

13. The device of claim 12, wherein a comparison between the noise level of the device are improved over a noise level of a device having a single-ended equalizer positioned prior to amplifier stages.

14. The device of claim 12, wherein a comparison between the distortion levels of the device are improved over distortion levels of a device having a single-ended equalizer positioned subsequent to amplifier stages.

15. The transmitting device of claim 12, wherein the differential equalizer provides the output signal having a frequency response that is tilted up.

16. The transmitting device of claim 12, wherein the differential equalizer provides the output signal having a frequency response that is one of tilted down, cable shaped, linear shaped, a combination of cable and linear shaped, a frown, and a smile.

17. A receiving device for receiving an input signal and providing an output signal having a particular frequency response, the receiving device comprising:

an input for receiving an input signal having an input power level;

a device for amplifying and equalizing the input signal, the device comprising:

a first differential amplifier stage for receiving the input signal and for amplifying the input signal;

a differential equalizer coupled to the first differential amplifier stage for equalizing the amplified input signal; and

a second differential amplifier stage coupled to the differential equalizer for further amplifying the input signal to provide an amplified output signal,

whereby the positioning of the differential equalizer between the first and second differential amplifier stages maintains a low level of noise and improved distortion levels.

18. The device of claim 17, wherein a comparison between the noise level of the device are improved over a noise level of a device having a single-ended equalizer positioned prior to amplifier stages.

19. The device of claim 17, wherein a comparison between the distortion levels of the device are improved over distortion levels of a device having a single-ended equalizer positioned subsequent to amplifier stages.